

SOME CHELONIAN RECORDS FROM MIZORAM¹

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(With one text figure)

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During a survey in the northeastern Indian state of Mizoram, six species of turtles and tortoises were recorded. These are the elongated tortoise *Indotestudo elongata*, brown hill tortoise *Manouria emys*, Asian leaf turtle *Cyclemys oldhamii*, keeled box turtle *Pyxidea mouhotii*, Indian roofed turtle *Kachuga tecta* and the Indian tent turtle *Kachuga tentoria*. Unidentified softshell turtles have also been recorded. Since this was the first survey, all records are new for the area. All species of chelonians are eaten by the local tribals, making conservation efforts difficult. However, some are protected in the notified wildlife sanctuaries and national parks. Expansion of human habitation, destruction of habitat for *jhum* (shifting cultivation as practiced by the hill tribes), and poaching for meat are the main conservation problems. The reported trade in turtle shells across the Indo-Myanmar international boundary is, however, going to become a matter of concern in the future. Recommendations have been made for conservation.

INTRODUCTION

The state of Mizoram (21° 58'-24° 30' N, 92° 16'-93° 25' E; area 21,081 sq. km) is located in the southern part of northeastern India (Fig. 1). Formerly referred to as the Lushai Hills of southern Assam, a part of the Himalayan system, the entire state is hilly. The terrain is dissected mostly by north-south flowing rivers making a series of parallel ranges. The highest ranges are towards the east, with the Phawngpui or Blue Mountain (2,157 m above msl) and Lengteng (2,141 m above msl) peaks. The lowest elevation is in the riverbeds near the Assam-Mizoram and India-Bangladesh border (less than 100 m above msl).

The chelonian fauna of the state was virtually unknown, and the literature on the region as well as on India's turtles and tortoises has virtually no reference to this area (Anderson 1871, Choudhury 1990, 1996a, b, 1998, Das 1985, 1990, 1991, 1995, Smith 1931).

The present account describes the records of turtles and tortoises discovered during my field

survey (April 2000) in Aizawl, Mamit, Kolasib, Serchip, Lunglei, Lawngtlai and Saiha districts.

Abbreviations: SCL = straight carapace length, CCL = curved carapace length, SCW = straight carapace width, CCW = curved carapace width, CH = carapace height, PL = plastron length, PW = plastron width, SH = shell height.

Local names: *Sartle* (Mizo), *Sattle* (Lai or Pawi, especially in Lawngtlai and Saiha districts), and *Seilka* (Mara or Lakher, especially in Saiha district).

STUDY AREA

The study sites were: Dampa Tiger Reserve, Dapchua village, Khawmawi village, Mampui village, Ngengpui village, Ngengpui Wildlife Sanctuary, Phura village, Palak Dil wetlands, Saiha, Sangau village, Thaltlang village and Phawngpui National Park (Fig. 1).

Dampa Tiger Reserve (500 sq. km), located in Mamit district, comprises of low hills with elevations of 150 to 1,000 m above msl. Vegetation is mostly tropical wet evergreen and semi-evergreen with bamboos. The fringe area is degraded due to currently used as well as abandoned *jhums*. Dapchua village is on the banks of the Tut (Gutur) river, a tributary of the

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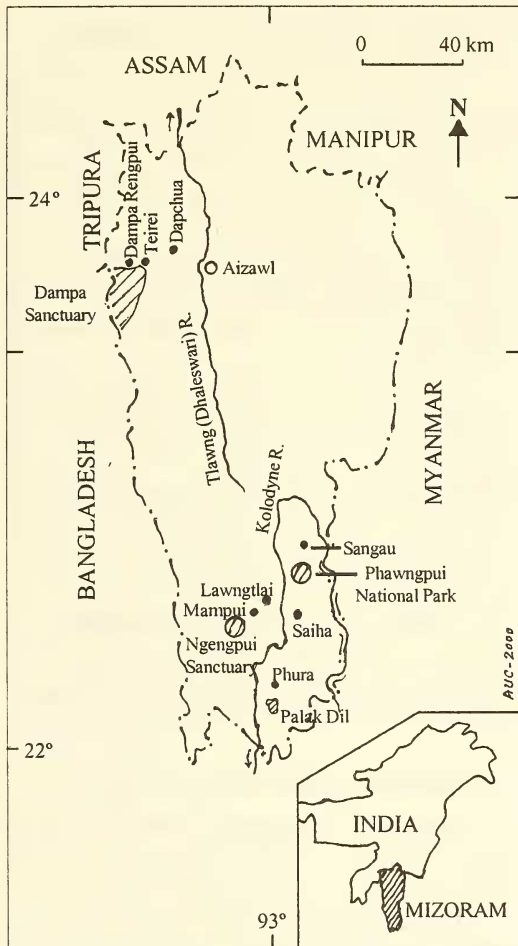


Fig. 1: Map of Mizoram showing the study sites

Tlawng or Dhaleswari River, about 150 m above msl, also in Mamit district. On both sides of the river, hill ranges rise to over 500 m above msl.

Khawmawi (Lunglei district), and Ngengpui (Lawngtlai district) villages are on the valley (150 m above msl) of Ngengpui River, a tributary of the Kolodyne River, in the northern fringe of Ngengpui Wildlife Sanctuary. Some of the finest rainforests of Mizoram are still found in this area (elevation 100-500 m above msl). The Sanctuary is 110 sq. km in Lawngtlai district. Mampui village, not far from Ngengpui

Sanctuary, is also in Lawngtlai district, but much higher (1,000 m above msl). Some fine patches of evergreen forest amidst *jhum* is typical of the vegetation.

Phura village and Palak Dil wetlands are located in the southern part of Saiha district. The former is a valley (200 m above msl) surrounded by hills (>400 m above msl), and the latter a natural lake (c. 1 sq. km at 300 m above msl). Some of the forest patches are still excellent, but *jhum* is widely practised here.

Saiha is the headquarters of Saiha district (1,100 m above msl) and is surrounded by degraded hillslopes with grass or scrub. Sangau (1,350 m above msl) and Thaltlang (1,300 m above msl) villages are near Phawngpui National Park (50 sq. km). The Park ranges from 1,100 to more than 2,000 m above msl, and has the highest peak in Mizoram (2,157 m above msl). Habitat in the lower areas (<1,600 m above msl) is tropical evergreen and higher up it is subtropical broadleaf. Towards east flows the Kolodyne River (c. 300 m above msl), which also marks the boundary between India and Myanmar at that stretch.

The climate of these areas is tropical monsoon with a hot and wet summer and a cool and usually dry winter. The temperature ranges from a minimum of 7 °C (December to early February) to a maximum of 34 °C (June to August) (extreme range: <5° to >36 °C). The annual rainfall ranges from 2,000 to 4,000 mm, about 75% of which falls in the monsoon (May to September). Winter rains are not uncommon.

METHODS

Turtles and tortoises were searched for during foot transects along the existing paths and streams in the forests (totalling 61 km), and boat-transect along Ngengpui River and Palak Dil (2.5 km). Transect along roads (by vehicle) covered 1,847 km. Motor vehicle was used to reach

different sites. Specimens displayed outside the tribal huts (usually all trophies are displayed outside) were also located from a moving vehicle. Houses in select villages were randomly searched for any preserved shell or part thereof. All materials were personally examined, identified, photographed and measured as per standard procedure.

RESULTS

Elongated tortoise *Indotestudo elongata*
(Blyth 1853)

Seven preserved specimens were found and examined; two more were reported. The specimens were at Dampa Rengpui and Teirei villages on the outskirts of Dampa Tiger Reserve, Mampui village, Ngengpui-Khawmawi villages, Phura village and Sangau village. Two specimens were reported from Saiha town, but could not be examined. The measurements are given at Table 1.

In areas closer to Mizoram, it has been recorded in Chittagong Hill Tracts of Bangladesh (Das 1995) and Hailakandi district of southern Assam (A. Choudhury, unpubl.). According to the collectors, it is widely distributed in bamboo forest and often caught in *jhummed* areas (after burning of vegetation). The sites of capture ranged from 150 to 1,000 m above msl (at Mampui).

Brown hill or Asian brown tortoise
Manouria emys (Schlegel & Müller 1840)

Two preserved specimens were seen and examined, and one more reported. The specimens were at Phura and Sangau villages. One reported from Phura could not be examined. The Phura specimen was obtained around 1997 from the hill slope near Palak Dil. The Sangau specimen was obtained in the 1980s from the slopes near the Kolodyne River. The measurements are given in Table 2.

In areas closer to Mizoram, it has been recorded in Rangkhyang Reserve Forest of Bandarban in Chittagong Hill Tracts of Bangladesh (Das 1995) and Hailakandi district of southern Assam (Choudhury 1996b). According to the collectors, it is rare nowadays, as sheer size makes it a prized catch and also easy to spot in *jhummed* areas (after burning of vegetation). The sites of capture ranged from 150 to 500 m above msl (slopes near Sangau). (Regarding subspecies, see discussion).

Unidentified softshell turtles Trionychidae

One preserved carapace seen at Thaltlang village. It was reportedly caught in Kolodyne River. At Palak Dil, more than one species of softshell, including large specimens, have been reported. Regularly caught by villagers at this large lake.

TABLE I
MEASUREMENTS OF ELONGATED TORTOISE *INDOTESTUDO ELONGATA* (IN CM)

Specimen/Site	SCL	CCL	SCW (gt)	CCW (n-n)	PL	PL	PW	Remarks
1. Dampa Rengpui	29.0	36.0	18.0	27.0				Nuchal small
2. Teirei	16.5	19.5	12.5	18.5	16.5	14.5	10.5	Nuchal present
3. Mampui	27.5	32.5	18.0	27.5	24.0	20.5	16.5	Nuchal prominent
4. Ngengpui	29.2	34.0	19.2	29.5				Nuchal small
5. Khawmawi	26.5	31.0	17.0	26.0				Nuchal absent
6. Phura	27.0	31.2	18.5	27.0				Nuchal absent
7. Phura	25.7	29.0	16.7	27.0	22.0	19.5	15.5	Nuchal absent. SH = 10.7
8. Saiha								Not examined
9. Saiha								Not examined

TABLE 2
MEASUREMENTS OF BROWN HILL TORTOISE *MANOURIA EMYS* (IN CM)

Specimen/Site	SCL	CCL	SCW	CCW (gt)	PL (n-n)	PL	PW	Remarks
01. Phura	54.0	59.0	36.5	59.0	53.0	49.0	36.0	SH= c. 23.0
02. Phura								Not examined
03. Sangau	38.5	44.0	27.5	43.0				CH= c. 13.5

In areas near Mizoram, there are records of the Indian softshell turtle *Aspideretes gangeticus* from the Barak river system, southern Assam, where it is among the common turtles locally caught and sold in the market. The major rivers of Mizoram such as the Tlawng (Dhaleswari) and Tuirial (Sonai) are tributaries of the Barak River. Other softshells recorded by me in southern Assam are the Indian peacock softshell *A. hurum* and Indian flapshell turtle *Lissemys punctata*.

Asian leaf turtle *Cyclemys oldhamii*
(Gray 1863)

One preserved carapace examined at Ngengpui-Khawmawi villages. The measurements are given in Table 3.

Near Mizoram, it has been recorded in Chunoti, district Chittagong, Bangladesh and North Cachar Hills district of southern Assam (Das 1995). The sites of capture ranged from 150 to 300 m. The Indian population of *Cyclemys* are now referred to as *C. oldhamii* (Fritz *et al.* 1997).

Indian roofed turtle *Kachuga tecta*
(Gray 1831)

No specimen found, but a Forest Department document states 13 individuals counted during the wildlife census on April 31, 1993 in Ngengpui Wildlife Sanctuary.

TABLE 3
MEASUREMENTS OF ASIAN LEAF TURTLE
CYCLEMYS OLDHAMII (IN CM)

Specimen/Site	SCL	CCL	SCW	CCW
01. Khawmawi	22.0	24.7	16.0	22.0

Indian tent turtle *Kachuga tentoria*
(Gray 1834)

Two preserved carapaces were seen at the Office of the Field Director, Dampa Tiger Reserve at West Phaileng. However, both the specimens were obtained from a truck which was carrying, among other things, a large number of turtle shells from Tripura to Champhai town, eastern Mizoram, for onward supply (to smuggle!) to Myanmar.

Keeled box turtle *Pyxidea mouhotii*
(Gray 1862)

Three preserved specimens were seen, of which two were examined. These were at Teirei village, on the outskirts of Dampa Tiger Reserve, Dapchua village and at Sangau village. The Sangau specimen was obtained in the 1980s from the slopes near Kolodyne River (For measurements see Table 4).

A specimen was obtained in Hailakandi district, Assam, not far from the Assam-Mizoram border (Choudhury 1998). It has also been recorded in Manipur (Choudhury 1996d). The sites of capture ranged from 150 to 500 m (slopes near Sangau).

**CONSERVATION
Problems**

Habitat destruction: Habitat destruction by man due to *jhum* cultivation, expansion of agriculture in the valleys, clearance for settlement, encroachment of various kinds, felling of trees, poisoning and dynamiting the rivers for fish, are major threats to the habitat.

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TABLE 4
MEASUREMENTS OF KEELED BOX TURTLE *PYXIDEA MOUHOTHII* (IN CM)

Specimen/Site	SCL	CCL	SCW	CCW	PL (gt)	PL (n-n)	PW	SH	Remarks
01. Teirei	16.7	19.0	12.0	18.0	16.2	15.7	10.2	-	-
02. Dapchua									Not measured
03. Sangau	17.0	19.0	12.0	17.0	15.7	-	9.5	5.7	-

Poaching: Poaching of turtles is done mainly for the pot. But it is apparent that they are also smuggled out to Myanmar for China and the Far East, for use in traditional Chinese medicine. The past record of trans-shipment of shells from Tripura to Myanmar through Mizoram strengthens this possibility. Fortunately, due to insurgency by the Reang (or Bru) tribals in the north, the movement of civilian vehicles between Damchara in Tripura and Mizoram has almost ceased. All the tribes inhabiting Mizoram, namely Mizo, Lai (Pawi), Mara (Lakher), Chakma, Reang, and Hmar relish turtle meat and any specimen seen is caught for food. In Palak Dil and other lakes, turtles are fished by rod and line, while some Myanmarese come occasionally to the former lake to spear softshells. The villagers of Phura reported that the Myanmarese are expert at spearing turtles, and the local villagers do not protest as the catch is shared.

Other problems: Every year, after burning the hill slopes for *jhum* (February-April), an unspecified number of turtles and tortoises are found either burnt or partly burnt. Some become easy target due to lack of cover. Larger species such as *Manouria emys* take shelter in small hill streams when the surrounding hillsides are burnt.

The ultimate cause of habitat destruction is, however, the very rapid growth of human population. In Mizoram, it grew from 0.33 million in 1971 to 0.69 million in 1991, i.e., more than double in two decades! Since the majority of the rural population practices *jhum* as the main occupation, the large-scale destruction of natural habitat seems inevitable.

Conservation measures taken

Legal Protection: *Aspideretes gangeticus*, *A. hurum* and *Lissemys punctata* are accorded the highest protection under Schedule I of the Wild Life (Protection) Act, 1972, while *Indotestudo elongata* and *Manouria emys* are protected under Schedule IV of the same Act. Most of the villagers are, however, unaware of this legal status. It is difficult to enforce the Act due to lack of information and ignorance.

Habitat Protection: Some of the habitats are under protected areas. However, they account for a meagre c. 4.8% of the total area of the State.

Of the six notified protected areas in Mizoram, three may not have sizeable chelonian populations due to their high elevation.

DISCUSSION

The chelonians of Mizoram are poorly known. This report provides some baseline data. It seems that *Indotestudo elongata* is still fairly common and widespread. *Manouria emys*, which has become extremely rare in the north and central Mizoram is still found in the south where some good forest remains. All the species are reported for the first time from Mizoram.

Variation in nuchal among *Indotestudo elongata* is interesting. It is absent in three specimens and prominent in one. I have observed specimens in Dhubri and Bongaigaon districts of Assam, in which the nuchal was absent or very insignificant.

The specimen of *Manouria emys* examined at Phura resembled the subspecies *emys* in having

large gulars that extend well beyond the carapace rim and also being relatively small in size. But interestingly, its pectorals do not resemble either of the subspecies. The scutes narrow towards the point. It resembles to some extent the Rangkyang specimen (however, the scutes of pectorals narrow towards the contact point, but scarcely touch each other, Das 1995) as well as a specimen at Guwahati Zoo from northern Karbi Anglong (Choudhury 1996b,c). These are considered to be *emys-phayrei* intergrade (Das 1995). However, Anderson (in Das 1991) believed that both subspecies were inseparable. Anderson's specimens from Naga Hills (Nagaland), the specimen at Guwahati Zoo from Karbi Anglong and the ones from Rangkyang and Mizoram seemed to possess characteristics of both the subspecies. Bhupathy (1994) suggested a re-evaluation of its taxonomic status.

Poaching for meat, habitat destruction through *jhum*, and the trade across the international boundary seem to be the major threats. Even in protected areas, the chelonians are not completely secure due to the ignorance of the human population. The fringe villagers know that killing of elephant *Elephas maximus* or tiger *Panthera tigris* is prohibited, but are not so aware regarding chelonians.

RECOMMENDED CONSERVATION MEASURES

1. **Creation of new Protected Areas:** Some important habitats such as Palak Dil should be brought under the protected area network.
2. **Extension of existing protected areas:** Part of Ngengpui Reserve Forest should be added to the Ngengpui Wildlife Sanctuary.
3. **Check on poaching and trade:** Poaching of chelonians should be checked at this stage, at least in the protected areas. The anti-poaching staff should be motivated and made aware that besides the mega species such as elephant and

tiger, chelonians also need their attention. Awareness among villagers with the help of NGOs will also be useful.

However, the most serious is the reported trade in preserved shells across the international boundary for use in traditional Chinese medicine, which encourages poachers to deliberately search for chelonians. This needs to be monitored and checked, at least on the main trade routes such as Champhai.

4. **Check on *jhum*:** While it is impossible to stop this practice, it can be reduced by introducing terracing, cash crops and horticulture.
5. **Other measures:** More detailed survey of the villages and the forest for further information on chelonians. Conservation education among locals, including the hill tribes of remote areas. Last, but not least, is the need to take up massive population control measures for the humans in the fringe areas. Considering the high literacy in the state, any awareness campaign should be smooth in comparison to other northeastern states.

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